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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,778	04/19/2005	Sean Adkins	10002/315087	6051

23370 7590 04/24/2009

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ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
04/24/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,778	ADKINS ET AL.	
	Examiner	Art Unit	
	DENNIS P. JOSEPH	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-33 and 38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-33 and 38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. This Office Action is responsive to arguments for No. 11/531,778 filed on March 6, 2009. Claims 19-33 and 38 are pending and have been examined.

Claim Rejections – 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 19, 27, 28 and 30** are rejected under 35 U.S.C. 102(e) as being anticipated by Ben-David et al. (US 2004/0100589 A1).

Ben-David teaches in Claim 19:

In a projection system capable of producing a color image, the projection system having a spatial light modulator (SLM) for each of three color channels, one for each primary color **(Figure 8 shows the dichroic mirrors 108, [0094] discloses that preferably, one mirror is used for each desired primary color (RGB))**, a method for adjusting the color of the image, the method comprising:

providing light having a spectral energy distribution **(Figure 2, [0022] and [0023] discusses various spectral coverage possibilities)** from at least one illumination source **(Figure 8, white light source 104, [0094], to a separating and re-combining device (Figure**

8, dichroic mirrors 108) for separating and reflecting the light to the SLM 110. Figure 8 shows both processes);

controlling the spectral energy distribution of the light entering into the color separating and re-combining device without reducing the overall brightness of the image **(Figure 8, [0094], the mirrors 108 control the light passing through and recombine it towards the SLM 110. Note that all the light is either being passed to the SLM or to the next mirror for the next light. There is no loss of light in this reflecting process);**

modulating the controlled light with at least one spatial light modulator (SLM) to form an image **([0095] discloses the SLM 110 for modulating light)**; and

projecting the image. **(Figure 8, [0096], display screen 112)**

Ben-David teaches in Claim 27:

The method of claim 19, wherein the projection system is used in a multiple projection system and the image produced by the system is combined with at least one other image produced by at least one other system to form a composite image. **(Figure 8 shows multiple SLMs 110 to form composite images on display screen 112)**

Ben-David teaches in Claim 28:

A projection system having three color channels, one for each primary color, comprising:

a plurality of SLM devices, one for each color channel **(Figure 8 shows the dichroic mirrors 108, [0094] discloses that preferably, one mirror is used for each desired primary color (RGB))**;

an illumination source capable of producing light **(Figure 8, white light source 104)**;

a first adjustable bandpass filter capable of controlling the spectral energy distribution of light in at least one color channel **([0100] discloses the use of band-pass filters, a couple of them, to have three different ranges of wavelengths separated for the use of increasing brightness and efficiency)**;

an integrating device capable of integrating the light produced by the illumination source as filtered by the first adjustable bandpass filter **(Figure 8, [0094] discloses of a collimating lens 106 for collecting the focusing the light (read as integrating), identical to what Applicant's integrating bar does)**;

a color separating and re-combining device capable of receiving the integrated light from the integrating device, separating the light into the color channels, directing the light in each color channel to the corresponding SLM, and re-combining the modulated light from each SLM to form an image **(Figure 8, [0094], the mirrors 108 control the light passing through and recombine it towards the SLM 110. Note that all the light is either being passed to the SLM or to the next mirror for the next light. There is no loss of light in this reflecting process. Figure 8 shows both processes)**; and

a projection lens capable of receiving the image from the color separating and re-combining device projecting the image **(Figure 8, 117 to project the image onto the display screen 112)**; but

wherein adjustment of the first adjustable bandpass filter acts to control color variations in the image. **([0100] discloses the use of band-pass filters to have three different ranges of wavelengths separated for the use of increasing brightness and efficiency)**

Ben-David teaches in Claim 33:

The system according to claim 28, wherein the projection system is used in a multiple projection system and the image produced by the system is combined with at least one other image produced by other system to form a composite image. **(Figure 8 shows multiple SLMs 110 to form composite images on display screen 112)**

Claim Rejections – 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claim 20-26, 29-32 and 38** rejected under 35 U.S.C. 103(a) as being unpatentable over Ben-David et al. (US 2004/0100589 A1) in view of Sugano (US 2001/0048560 A1)

As per Claim 20:

Ben-David does not explicitly teach "wherein the illumination source comprises a main illumination source and at least one secondary illumination source and the spectral energy distribution is controlled by adding light from at least one secondary illumination source."

Ben-David is concerned with brightness levels and suggests possibly using flash lamps to boost the levels of brightness. ([0075])

However, in the same field of endeavor, spatial light modulators, Sugano teaches of using multiple optical illumination systems, 3R, 3G and 3B. (Sugano, Figure 3, [0035]). Each provides illumination for the RGB colors onto the prism 2 to be output to the display and adds light/brightness. This satisfies the need for at least one secondary illumination source and provides one for each color.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the multiple illumination sources as taught by Sugano, with Ben-David's SLM apparatus with the motivation that by using a well-balanced light ratio, a high brightness display can be achieved, with superior color reproducibility, high performance and good purity. (Sugano, [0018]-[0019])

As per Claim 21:

Figure 7 of Ben-David shows a chromaticity graph for calculating the contribution levels of each of the primary colors and Suguano teaches of using multiple illumination sources for each of the primary colors. The combination together would teach the claimed limitation for calculating the amount of light from the secondary sources is needed to complement the main illumination source.

As per Claim 22:

The method according to claim 19, wherein there are three secondary illumination sources, one for each color channel. **(The combination with Sugano teaches to use multiple secondary illumination means, specifically one for red, green and blue)**

As per Claim 23:

The method according to claim 21, wherein the spectral energy distribution of the total illumination is controlled by controlling an optical power of light from each secondary illumination source to achieve a desired chromaticity for each primary color. **(This limitation is obvious in light of Ben-David and Suguano's chromaticity graphs and teachings of controlling the amount of light being passed through the mirrors)**

Ben-David teaches in Claim 24:

The method according to claim 20, wherein each secondary source has an associated adjustable dichroic filter allowing a resulting spectral energy distribution of each secondary source to be shifted toward longer or shorter wavelengths. **([0100] discloses various filters to**

carry out the chromaticity values shown in Figure 7. [0094], dichroic filters are well known in the art)

As per Claim 25:

Ben-David teaches of using band-pass filters for a specific wavelength range (for controlling how much of a light is passed through), so there is a means for controlling how much light is passed on and this would be obvious to one of ordinary skill in the art. Furthermore, the functionality of band-pass filters are well known in the art and Ben-David states they can be incorporated. The location of the filter is a matter of design choice since the functionality is the same. **([0022] and [0100]-[0101])**

As per Claim 26:

The method according to claim 25, wherein the amount of each primary color in the light entering the separating and re-combining device is computed by determining the chromaticities of the primary colors with the adjustable bandpass filter in a neutral position and then adjusting the bandpass filter to bring the resultant mixture to a desired chromaticity for each primary color. **(Ben-David teaches of using the band-pass filters as noted above for various wavelengths. The positions are plentiful and are shown in Figure 7 for the various chromaticity combinations)**

As per Claim 29:

Ben-David teaches of using band-pass filters for a specific wavelength range (for controlling how much of a light is passed through), so there is a means for controlling how much light is passed on and this would be obvious to one of ordinary skill in the art. Furthermore, the functionality of band-pass filters are well known in the art and Ben-David states they can be incorporated. The location of the filter is a matter of design choice since the functionality is the same. **([0022] and [0100]-[0101]. Figure 7 for the various chromaticity combinations)**

As per Claim 30:

Ben-David teaches of using band-pass filters ([0100]) and these control the specific wavelengths of light that are allowed to pass, so this accounts for variations in color. Ben-David further teaches to add more primary filters to help increase brightness and efficiency, teaching for including multiple filters.

As per Claim 31:

Ben-David teaches of using band-pass filters for a specific wavelength range (for controlling how much of a light is passed through), so there is a means for controlling how much light is passed on and this would be obvious to one of ordinary skill in the art. Furthermore, the functionality of band-pass filters are well known in the art and Ben-David states they can be incorporated. The location of the filters are a matter of design choice since the functionality is the same. ([0022] and [0100]-[0101]. Figure 7 for the various chromaticity combinations)

As per Claim 32:

The location of the relay, which house the band-pass filters, is a design choice. Ben-David teaches of using these filters in [0100] to filter the amount of light and to control variations. As discussed above, the functionality is the same the location choices are obvious to one of ordinary skill in the art.

As per Claim 38:

The method according to claim 22, wherein each secondary source has an associated adjustable dichroic filter allowing a resulting spectral energy distribution of each secondary source to be shifted toward longer or shorter wavelengths. **([0100] discloses various filters to carry out the chromaticity values shown in Figure 7. [0094], dichroic filters are well known in the art)**

Response to Arguments

7. Applicant's arguments considered, but are respectfully not persuasive.

Applicant argues that Figure 8 of Ben-David does not serve the same purpose to the present invention, specifically that they do not control the spectral energy distribution of light, nor do they separate and re-combine. However, light from the light source 104 is indeed passing through the dichroic mirrors, which are well known for the purpose for the claimed purpose. Examiner can provide references which attest to this since Applicant seems to be traversing this statement. Figure 8 clearly shows a means for separating the light and recombining light. It is inherent that the separated light for each color is then projected as combined images for the viewer to see.

Applicant argues that the controlling light and that passing through and entering light are not one in the same and states that the Office Action did not address the differences. However, Examiner does not see any difference between the two terms, at least not with the currently broad claim language. It simply claims "light entering into", so Applicant's arguments, while considered, are not patentably distinct from Ben-David, at least not as currently claimed. Examiner is free to interpret this language has passing through until this is claimed better.

Applicant argues against the arranging of the claimed items, specifically the bandpass filters. As claimed, the bandpass filters are capable of controlling the spectral energy distribution in at least one channel. Figure 8 shows the various channels created by the dichroic mirrors and the filters are used in conjunction with the color wheel as shown in Figure 4a. Figure 3B for example shows the wheel before the various lens used, for example, in Figure 8. Thus, the bandpass filters are indeed located before the rest of the claimed limitations. Please note that this is not combining or using different embodiments together, the other figures are simply used to show the location of the filters that were mapped by the Examiner. As a result, this argument is respectfully considered to not be persuasive.

Applicant argues against the 103 section rejection combining Ben-David with Sugano, saying the combination was not reasonable from a physical standpoint, contending there was not a reasonable chance of success. However, Examiner feels this is not persuasive because the number of light sources is well known to range from one to several, depending on how many colors are desired. Furthermore, it is a simple substitution and does not actually physically interfere or negatively impact the actual modulating process/lens/etc. It is the Examiner's stance that this is a reasonable combination with the proper motivation as given in the rejection. Several

KSR teachings apply here, such as simple substitution, known method, and obvious to try. If Applicant is still not satisfied, Examiner can provide additional references which show this common teaching.

Applicant is advised to overcome the current rejection by better claiming the differences of how the light "enters" the various devices. Applicant's arguments on this were slightly mitigated by the broad claim language. Another alternative is to claim some of the inventive concept of how the light is changed, shown by the various chromaticity figures throughout Applicant's disclosure as well as the various wavelengths for the various primary colors. Another way to overcome the current rejection is to better claim the structure of the invention as shown in Figure 7 as Applicant feels this is different. Better defining it would better help Applicant's arguments in this area.

Conclusions

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS P. JOSEPH whose telephone number is (571)270-1459. The examiner can normally be reached on Monday-Friday, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJ

/Amr Awad/

Supervisory Patent Examiner, Art Unit 2629